

Outcomes of the second workshop of the Food Sustainable Consumption and Production Round Table Working Group 1: deriving scientifically sound rules for a sector-specific environmental assessment methodology

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Abstract

Purpose This paper illustrates the consensus achieved by the members of the European Food Sustainable Consumption and Production Round Table Working Group 1 in their second scientific workshop held in the European Commission's Joint Research Centre site in Ispra, Italy on July 5–7, 2011. This workshop came after having run a detailed analysis, of data gaps and of methodologies, for the environmental assessment of food and drink products. In particular, the aim of this workshop was to reach consensus amongst key stakeholders on those approaches found diverging across methodologies and on which the forthcoming protocol for the ENVIRONMENTAL assessment of FOODS and Drinks (ENVIFOOD Protocol) is expected to provide guidance to the sector.

Methods Almost 30 round table members joined the workshop. Most of them were representatives from business

associations associated with the food and drink supply chain and their member companies, EU member state governments, government-supported initiatives on environmental labelling schemes, NGOs and The Sustainability Consortium. Several European Commission staff members also participated in the workshop. A pool of selected senior scientists on food LCA, data and environmental impact assessment methods were also invited to join the workshop. Even if not eligible to take part in the round table decision-making process on the workshop outcomes, some of these invited scientists joined the workshop and actively contributed to the discussion by providing participants with their arguments. A pre-analysis of key existing guidelines and the guiding principles for voluntary environmental assessment and communication agreed by the food round table members provided the basis for the workshop. Besides two plenary sessions (i.e. one to introduce the topics at the beginning of the workshop and one in the end to draw conclusions), the workshop had three ad hoc breakout sessions to discuss those approaches where consensus is missing across environmental assessment methodologies. **Results** Bearing in mind the twofold purpose of the ENVIFOOD Protocol (i.e. providing guidance for assessments instrumental to both communication and environmental improvement), some approaches for assessment were agreed in the workshop. For instance, in the context of those assessments instrumental to business-to-consumer (B2C) communication, the functional unit shall be equal to 100 g or ml. In addition, the functional unit can also be expressed either per recommended serving or per portion. When it comes to those assessments for business-to-business communication, reference flows shall be preferred to functional units as reference units of analysis. These and many other approaches on calculation rules, data quality and impact assessment were agreed

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by the round table members. These will be likely integrated into the ENVIFOOD Protocol.

Conclusions Despite the workshop was relatively successful in terms of consensus achieved, some issues still remained. Round table members are continuing the discussion inside the working group 1 drafting group to address those issues where no consensus was reached (e.g. system boundary for assessments instrumental to B2C communication) or where a more in-depth background analysis was needed (e.g. accounting for land use change, allocation for recycling). A public consultation will be run in 2012 to ensure that the coming ENVIFOOD Protocol is both scientifically sound and practical to implement.

Keywords Drink · ENVIFOOD Protocol · European Food SCP Round Table · Food · Sustainable consumption and production

1 Introduction

The European Food Sustainable Consumption and Production (SCP) Round Table is an international initiative co-chaired by the European Commission and relevant business associations involved in the food and drink supply chains worldwide. Members of the European Food Sustainable Consumption and Production Round Table (Food RT) are committed to helping consumers and other stakeholders to make informed choices by providing them with accurate and understandable information on relevant product characteristics, including environmental performance (Food RT 2012). In 2010, Food RT members were all unanimous in approving the guiding principles on the voluntary environmental assessment and communication of environmental information along the food chain, including to consumers (Food RT 2010).

Currently, Food RT Working Group 1 (WG1) is conveying on a set of methodological rules for the environmental assessment of foods and drinks, given the proliferation of standards and technical guides in this field. This Food RT's set of rules will be named protocol for the ENVIRONMENTAL assessment of FOODS and DRINKS (ENVIFOOD Protocol).

Building on the guiding principles (Food RT 2010), the ENVIFOOD Protocol will be a common framework facilitating that environmental assessments are scientifically reliable and consistent in supporting informed choice. In particular, this will support environmental assessments conducted in the context of business-to-business (B2B) as well as business-to-consumer (B2C) communication, and the identification of environmental improvement options. According to the guiding principles (Food RT 2010), the ENVIFOOD Protocol is expected to be in line with ISO standards on life cycle assessment and with recognized scientific methodologies. More specifically, use shall be made of international and European

standards and guidelines and derived sector-specific guidance documents, as applicable.

In June 2010, WG1 arranged a first scientific workshop at the European Commission's Joint Research Centre (JRC) with the aim of identifying the key scientific inputs for developing such protocol, initially named harmonised framework methodology for the environmental assessment of food and drink products (Peacock et al. 2011). The outcomes of the 2010 scientific workshop served as basis for elaborating the Food RT WG1 Road Map for the development and dissemination of the ENVIFOOD Protocol. According to this road map, the major tasks to be conducted in 2011–2012 are: a detailed analysis, of data gaps and of methodologies, for the environmental assessment of food and drink products; drafting of the ENVIFOOD Protocol; public consultation and revision; testing the Protocol through case studies; fine-tuning of the Protocol.

The detailed analysis has been recently finalised (De Camillis 2011; De Camillis et al. 2011a, b; Schenker et al. 2011). As the protocol is expected to be built on the existing science for the environmental assessment of food and drink products, rather than inventing a new methodology from scratch, this detailed analysis has scanned against a set of criteria:

- General level and sector-specific methodologies and guidelines on the environmental assessment of products and
- Data gaps relevant for the environmental assessment of food and drink products.

A lack of consensus on several methodological aspects was found across the methodologies analysed. The principal aim of the 2011 Food RT WG1 workshop was to analyse those aspects where consensus does not exist at present and to identify specific methodological approaches to be incorporated in the ENVIFOOD Protocol.

The proceedings of the 2011 Food RT WG1 workshop have been published recently (De Camillis et al. 2012). This paper highlights those methodological approaches collectively agreed by Food RT members during the workshop and shows how these approaches have been identified.

2 Structure of the workshop

The workshop was structured over 2 days as follows:

- An introductory plenary session to underline the workshop expectations and illustrate the key findings of the detailed analysis on the existing and upcoming methodologies for assessing the environmental performance of food and drink products;
- Three breakout sessions to analyse those methodological approaches where consensus is needed and

- A closing plenary session for letting breakout session chairs reporting back to the plenary the agreement achieved in each individual breakout session and confirm such approaches.

3 Building up consensus among scientists, governmental initiatives and supply chain partners

To stimulate the discussion within the workshop and achieve scientifically sound outcomes that can be shared by the scientific community, selected academic researchers on life cycle assessment (LCA), impact assessment and environmental labelling of food and drink products were invited to join the numerous scientists and representatives of the Food RT constituencies and the experts of the European Commission.

The following invited researchers joined the workshop: Sebastien Humbert (expert on LCA and water footprint from Quantis, a Swiss consultancy), Maurizio Cellura (expert on food LCA from the University of Palermo, Italy), Niels Jungbluth (editor of scientific papers on food LCA for the present journal, expert on LCA and inventories from ESU services, a Swiss consultancy), Jennifer Davis (senior expert on food LCA from SIK—the Swedish Institute for Food and Biotechnology), Hannele Pulkkinen (researcher on food LCA, carbon footprint and environmental labelling from MTT Agrifood Research Finland) and Jan Grenz [project leader for the FAO's "Sustainability Assessment of Food and Agriculture (SAFA) Systems" project]. The involvement of the above-mentioned experts, or any other participant, does not imply their agreement on the workshop outcomes.

In addition to the invited experts, notable was the participation of representatives from European governmental environmental agencies, governments and government-backed organizations (e.g. consultants and representatives from: the Department for Environment, Food and Rural affairs (DEFRA) and the Waste and Resources Action Plan for the UK; the French Ministry of Ecology and Sustainable Development; the Spanish Ministry of the Environment; and the Swiss Federal Office for the Environment (FOEN)). These representatives actively contributed to the workshop by intervening in the discussion when their own experiences were relevant in establishing and/or running those environmental labelling schemes they are in charge of.

Beyond the participation of many experts from the JRC, other directorates of the European Commission are involved in the round table and joined the workshop. Fruitful was, e.g. the presence of Michele Galatola of DG Environment (DG ENV). Participation by the JRC and DG ENV also brought in the European Commission's experience from the European Platform on life cycle assessment, and more

recently in developing the emerging European environmental footprint guides for products and organisations.

The presence of international actors, such as representatives from FAO projects, The Sustainability Consortium, CIRAIG, ISO technical committees and UNEP/SETAC International Life Cycle Initiative have remarked on one hand the need to find a consensus on methodological approaches worldwide. On the other hand, the joint contribution of international partners showed that a univocal methodology for the environmental assessment of food and drink products can be identified, shared and followed worldwide.

4 Consensus achieved and outstanding issues

This section illustrates where consensus was achieved in the workshop on some of the controversial methodological approaches highlighted in the detailed analysis, of data gaps and of methodologies, for the environmental assessment of food and drink products run by the Food RT WG1 (De Camillis 2011; De Camillis et al. 2011b). The following approaches have been agreed in the workshop by Food RT members for the specific purposes of helping develop the ENVIFOOD Protocol. These approaches will apply as sectorial guidance inline with the guidance principles of the Food RT (Food RT 2010).

4.1 Unit of analysis for B2B communication-related applications

As the final product is unknown at the point of sale (e.g. retailer, market stall, online shop), the unit of analysis for those B2B communication-related applications corresponds to the reference flow whenever data are meant to be shared among supply chain partners and not disclosed to the public. A reference flow shall be expressed either in weight or volume. Packaging shall be included in the reference flow.

4.2 Unit of analysis for B2C communication-related applications

As per the European regulation on food information to consumers (EU 2011), the unit of analysis shall be expressed per weight or volume (i.e. 100 g or ml). In addition, the unit of analysis can also be expressed either per recommended serving or per portion.

4.3 System boundary for B2B communication-related applications

All relevant life cycle phases need to be considered in the system boundary up to the exit gate of the organization

delivering the product under investigation (i.e. from cradle-to-gate approach).

4.4 System boundary for B2C communication-related applications

Ideally, all relevant life cycle phases should be considered in the system boundary (i.e. from cradle-to-grave approach). Packaging shall be considered within the system boundary. However, different system boundaries can be set up, depending on the use phase of the product group concerned. The breakout group did not agree on a general rule for how the use phase should be dealt with. The WG1 drafting group is investigating how food and drinks can be grouped according to the key characteristics of their use phase (e.g. type and range of possible uses, availability of clear instructions for cooking on the package) and will come out with recommendations accordingly.

4.5 Life cycle phases that need special consideration

Some phases of the life cycle of food and drink products are particularly complicated and require an in-depth analysis before modelling. Key elements to be taken into account when modelling use phase and product end of life have been identified. In particular, the range of possible uses of foods and drinks, and the presence of detailed instructions on the label were found key elements for modelling the use phase. When it comes to product end of life, it was highlighted that waste streams occur along the entire life cycle and can be distinguished among those generated up to the consumption phase, those coming from the consumption and those generated after the consumption. Data and statistics on the fate of waste categories are needed to help modelling product end of life.

4.6 Data quality requirements and dealing with data gaps

Verifiable product specific primary data are to be preferred to secondary data. Quality shall be evaluated by taking into account the following aspects: technological, temporal and geographical representativeness, completeness and precision.

Primary data are required for processes operated or managed by (under managerial or financial control of) the reporting company. Exceptions are possible for emissions from livestock, their manure and soil, which are treated as secondary data. Whenever primary data are not available, then secondary data of the highest practical quality should be used.

Whenever there is a lack of data, their significance should be evaluated first before pursuing the use of extrapolated data. In this context, a dataset is significant if it is above the cut-off threshold. If the estimated data have the potential to

change the conclusion of the study, they should be somehow included. Data extrapolations may be used for this purpose.

Primary and secondary data should be compliant with the ILCD Data Network entry level requirements (European Commission's Joint Research Centre 2010a). Country-specific secondary data are recommended. For the ILCD Data Network non-compliant data, it was recommended to assess the reliability of data by using the ILCD Handbook data quality indicator (European Commission's Joint Research Centre 2010b). Data and calculations need to be transparent, enabling external peer reviews.

4.7 Handling multi-functional processes

Depending on the context, different solutions to solve unit process multi-functionality are appropriate. The ISO 14044:2006 hierarchy on allocation applies starting from the avoidance of allocation whenever possible through unit process subdivision.

Whenever unit processes cannot be subdivided with certainty, system expansion (meant as substitution) shall be performed as well as a sensitivity assessment. Whenever an alternative product (system expansion) cannot be identified with certainty, the inputs and outputs of the system should be partitioned among its products or functions in a way that reflects the underlying physical relationships between them. Whenever it is unclear if the allocation based on the latter approach is appropriate, economic allocation shall be performed as well as a sensitivity assessment. Whenever economic allocation is performed, sensitivity assessments on the assumed economic value (price) shall be performed. If the economic allocation criterion is adopted, the average market price over a 3-year period should be the baseline and a sensitivity analysis should be run. If possible, the price of the market on which the product under investigation is sold shall be used. If allocation cannot be avoided, the choice of the allocation criterion should be justified and reported by filling a template. The WG1 drafting group will continue the discussion on how to handle multi-functional processes, and some recommendations may be subject to change (e.g. how to best position the substitution approach in the above stepwise procedure, and how to handle the allocation procedure step 3 as per ISO 14044:2006 when economic allocation cannot be applied).

4.8 Selecting environmental impact categories

A list of relevant impact categories for the environmental assessment of food and drink products shall be outlined as minimum requirement with the option of additional impacts should their inclusion be relevant, possible and appropriate. To complete this task, the drafting group will put together a comparative table of categories from the ILCD Handbook

(European Commission's Joint Research Centre 2011) and the French BP X30-323 (AFNOR-ADEME 2011).

5 Conclusions

After having conducted a detailed analysis, of data gaps and of methodologies, for the environmental assessment of food and drink products (De Camillis 2011; De Camillis et al. 2011b), the Food SCP Round Table Working Group 1 has arranged a workshop to discuss in detail those controversial issues where consensus is needed. Many methodological approaches on calculation rules, data quality and impact assessment were agreed by the round table members in the workshop. Built on the guiding principles of the Food SCP Round Table, these approaches are the starting basis for development of the ENVIFOOD Protocol. Nevertheless, a review by the WG1 drafting group is ongoing. Thus, the recommendations of the ENVIFOOD protocol may be slightly different than the ones presented in this paper as outcomes of the workshop.

Despite the workshop being successful in terms of consensus achieved for the food and drink sector, the Food SCP Round Table members will continue the discussion inside the WG1 drafting group to address those few remaining issues where no consensus was reached in the workshop (e.g. system boundary for assessments instrumental to B2C communication) or where a more in-depth background analysis was needed (e.g. accounting for land use change, allocation for recycling). A public consultation will be run in 2012 to ensure that the planned ENVIFOOD Protocol is both scientifically sound and practical to implement.

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